


## Data Recipes

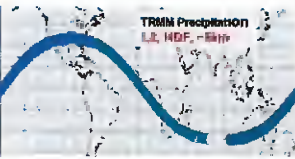
### Toward Creating How-To Knowledge Base for Earth Science Data

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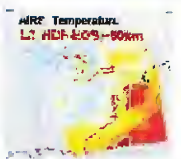
NASA Goddard Earth Sciences Data and Information Services Center (GES DISC)  
NASA Earth Science Data System Working Groups — Data Recipe Working Group



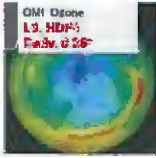
## Examples of Earth Science Data



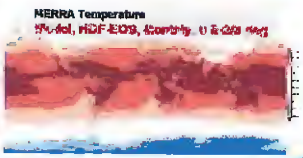
TRMM Precipitation  
L3, HDF, 3-hourly




AIRS Temperature  
L2, HDF-EOS, 80km



OMI Ozone  
L3, HDF5  
Daily, 0.5°



MERRA Temperature  
4x4km, HDF-EOS, 1-hourly, 0.5°-2.5° lat/lon




## Why Create Data Recipes ?

### Earth Science data sets are complicated

- **Data type and structure** : swath, grid, point, vector, tiled, ...
- **Map projection** : Equidistant, Sinusoidal, ...
- **Resolution** : hourly, daily, monthly, ...; m, km, deg, ...
- **Data formats** : HDF, HDF-EOS, netCDF, GRIB, GeoTIFF, ...
- **Metadata models** : ECHO, GCMD, HDFEOS, COARDS, netCDF-CF convention, ...

**Solution: Developed data services and tools**

- 70+ data services or tools at EOSDIS DAACs
- all services or tools have user guides
- online FAQ for data access and usage




## Why Create Data Recipes ?

### But, still many questions, e.g.:

- How to download data in a specific format (netCDF, ASCII, ...)?
- How to download time series to a single file in netCDF?
- How to read data with a data tool (ArcGIS, GrADS, R, ...)?
- You have a number of data services; which one is best for doing my work?
- ...


**Solution: Data Recipes could be helpful!**

They help distribute key expertise from those who have it to those who need it



## Characteristics of Data Recipes

- **Task-oriented** -- solve a specific problem
- **Detailed** -- provide step-by-step instruction with screenshots
- **Real data** -- work with real data archived at data centers
- **Online** -- reduce supporting resources for data centers and save time for data users



## Data Recipe Structure at GES DISC

A data recipe is a **task-oriented, common-structured**, online How-To page, containing the following eight sections:

- ✓ **Overview** -- summary of the recipe
- ✓ **Best When** -- conditions for which the recipe is applicable
- ✓ **Task** -- group name to which the recipe topic belongs (obtaining data, reading/viewing data, format conversion, etc.)
- ✓ **Example** -- description of a use scenario for the recipe
- ✓ **Tool or Service** -- name of the tool or service to which the recipe applies
- ✓ **Procedure** -- **step-by-step instruction with screenshots**
- ✓ **Discussion** -- additional information about using the service or tool
- ✓ **See Also** -- related recipes

**Each recipe is carefully tested by scientists other than the author**

### Example Data Recipe Topics

<http://disc.gsfc.nasa.gov/recipes>

**Obtaining Data in NetCDF:**

- How to Obtain Data in NetCDF Format via OPeNDAP
- How to Obtain Data in NetCDF Format via SSW
- How to Obtain Spatially Subsampled Time Series Data in One NetCDF File via GDS

**Importing Data into ArcGIS:**


- How to Import Gridded Data in NetCDF Format into ArcGIS
- How to Import Satellite Swath Data in NetCDF Format into ArcGIS

**Obtaining Subsampled Time Series:**

- How to Obtain a Spatio-temporal + Variable Subset of Data with the Simple Subset Wizard
- How to Obtain Spatial Subsampled Time Series in ASCII Format via GDS

### Example of Data Recipe

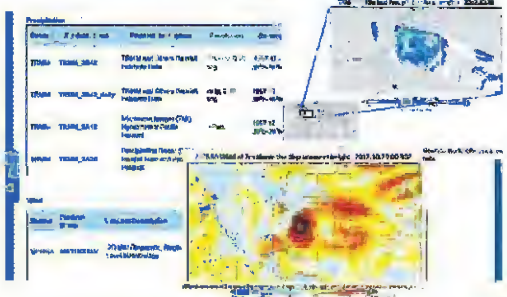
**How to Import Gridded Data in NetCDF Format into ArcGIS**



For someone in GIS community who is not familiar with the netCDF data format

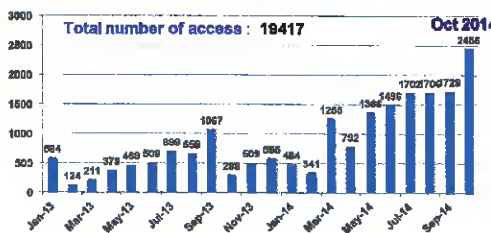
### Example of Data Recipe

**How to Obtain Data for Conducting Hurricane Case Study**



Advanced event-based data search with sample images

### Monthly Access of Data Recipe



Total number of access : 19417

Oct 2014: 2455

- ❖ The data recipe project was initiated in late 2012.
- ❖ The first set of data recipes was released in early 2013.
- ❖ There is a total of 22 recipes that are published so far

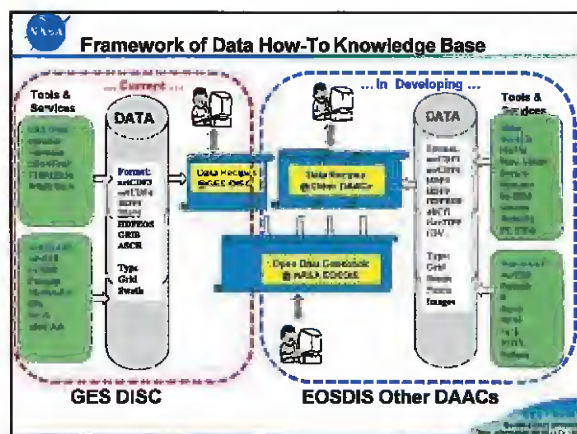
### Future Plans at GES DISC

- Group recipes to form a **searchable data recipe catalog**
- Include links to relevant data recipes on GES DISC product landing pages
- Incorporate data recipe feedback capabilities and facilitate moderated **user recipe contributions** to expand GES DISC Data Cookbook
- Provide links to existing data How-To from "Open Sources", such as GrADS, HDF, NCO, Python, ...

### NASA EOSDIS Data Recipe Activities

The NASA Earth Science Data System Working Group on data recipes (ESDSWG-data recipe) was established in Spring 2014.

- Inventory and analysis of existing data tools and help documents
- Provide recommended **data recipe template** and guidelines for writing and grouping data recipes in a common structure
- Initiate an EOSDIS-wide campaign for leveraging the distributed knowledge within EOSDIS and its user communities; to eventually create an EOSDIS "open data cookbook" for better serving the data users



**Thank You**

<http://disc.gsfc.nasa.gov/recipes>

Inviting more data centers and data users to create and enrich data How-To for everyone

**Make your knowledge powerful !**